Recanalization of flush iliac occlusions with the assistance of a contralateral iliac occlusive balloon

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Treating flush iliac artery occlusion by endovascular means can be very challenging and is a cause of technical failure requiring open surgical intervention. We describe a simple endovascular technique that can be valuable in increasing technical success and avoiding the use of a re-entry device. The technique involves placing an occlusive contralateral iliac artery balloon to assist in recanalizing a flush iliac artery occlusion. (J Vasc Surg 2012;55:872-4.)

Aortobifemoral bypass has been considered the gold standard for treating chronic iliac occlusion, but results of endovascular recanalization of the iliac arteries now approach those of aortobifemoral bypass, with much less morbidity and a significantly shorter hospitalization. A second option, stenting for a TransAtlantic Inter-Society Consensus D lesion, has been performed with encouraging results. Endovascular recanalization and stenting of chronic iliac occlusions can be performed under local anesthesia and as an outpatient procedure, which makes it an attractive alternative for patients who are at high risk for open aortic surgery or general anesthesia, or both.

“Flush” arterial occlusions (ie, chronic occlusions that begin at the proximal-most origin of the artery) are difficult to manage by endovascular means, as we learned from treating flush superficial femoral artery occlusions. Flush occlusions can reduce technical success and sometimes require an extra-anatomic bypass to address the iliac occlusion.

Common iliac artery occlusions pose a difficulty for re-entry devices into the aorta from a femoral retrograde approach, and the re-entry level in the aorta can be unpredictable. That is the reason some interventionalists prefer the brachial approach. However, when attempting recanalization of flush occlusions, the wire and catheter tend to go into the contralateral iliac artery, which represents the path of least resistance. The guiding sheath provides some support for the wire and catheter during recanalization attempts, but in the case of a flush iliac occlusion, the guiding sheath often still has difficulty in completely engaging the lesion (Fig 1). Without an origin to engage with the guiding sheath, the advantage in using the stiff support of the guiding sheath is negated.

We present a simple endovascular technique that uses a contralateral occlusive balloon to direct a guiding sheath toward a flush common iliac occlusion and helps to initiate a subintimal plane.

**TECHNIQUE**

Patients with clinical indications for revascularization and suspected aortoiliac disease undergo imaging with computed tomography angiography (CTA) with 2.5-mm slice thickness. We then preferentially approach flush iliac occlusions identified on CTA imaging by accessing the left brachial artery and the contralateral femoral artery.
sound guidance is used to access the contralateral femoral artery with a micropuncture needle and catheter, which is converted to a 5F short sheath with a radiopaque tip.

The left brachial artery is accessed in a similar fashion if need for a 6F sheath is anticipated; alternatively, an open brachial exposure is instead performed when a ≥7F sheath is needed or if the brachial artery diameter is <4 mm or appears to have significant atherosclerotic disease on ultrasound imaging. Pinnacle Destination guiding sheaths (Terumo Interventional Systems, Somerset, NJ) are used for the brachial access. Once both sheaths are in place, the patient is given 80 to 100 units/kg of heparin and titrated to a goal activated clotting time of ≥250 seconds to minimize the risk of access-related complications such as thrombosis and embolization.

An attempt at antegrade subintimal recanalization without the contralateral balloon is our first-line tactic in cases of flush common iliac artery occlusion. When this is unsuccessful, however, an attempt is made at recanalization using a balloon in the contralateral iliac artery (Fig 2). An occlusive balloon is advanced over a stiff Glidewire (Terumo) and placed across the origin of the contralateral common iliac artery. The occlusive balloon should be slightly undersized to occlude the iliac artery but avoid dissection and rupture; typically, a 6.0 × 40-mm low-pressure balloon serves this purpose. The balloon is inflated to its nominal pressure, and the guiding sheath is advanced to the point of occlusion at the origin of the ipsilateral common iliac artery.

With the additional support provided by the inflated balloon, directed attempts at crossing the proximal cap of the occlusion are made using the guiding sheath and a stiff Glidewire. Once re-entry is confirmed angiographically, bilateral kissing balloon-expandable stents are placed. Technical success was achieved in two patients recently treated with this technique, with excellent angiographic results and without the use of a re-entry device (Fig 3).

DISCUSSION

The treatment of flush common iliac occlusions can be technically challenging. Predictors of failure of recanalization of chronic iliac occlusion are not well known and described. Heavy calcification and a retrograde femoral approach are risk factors for technical failure.8 Furthermore, retrograde attempts typically require the use of expensive re-entry devices that are associated with significant costs9 but still do not guarantee technical success.4,8

The technique we have described here is simple but valuable in increasing technical success. We believe approaching these lesions by starting at the proximal cap of the iliac occlusion can increase the technical success rate because it is easier to regain true lumen access from this antegrade approach. We perform kissing stents to avoid plaque shifting into the contralateral side and to make sure...
we cover the diseased segment that most times protrudes into the aortic bifurcation. This technique does not increase the number of access sites because the contralateral femoral artery is accessed for angiography and/or placing of kissing stents.

The procedures in the two patients who were recently treated at our institution using this technique were completely percutaneous and done under local anesthesia and moderate sedation. Both patients were discharged home the same day of the procedure. Previous attempts using both brachial and femoral retrograde approaches had failed in one patient. The patient wanted to try conservative treatment before an open surgical bypass and was brought back for a final endovascular attempt after this technique had been initiated. We found it helpful to have the balloon protruding into the aorta to support and stabilize the destination sheath mainly during the initiation of chronic iliac occlusion recanalization. At their 6-month follow-up assessments, both patients were symptom-free, with normal ankle-brachial indices. One patient had a small hematoma at the brachial puncture site that was managed conservatively.

CONCLUSIONS

Antegrade attempts at recanalization of a flush iliac artery occlusion with placement of a contralateral balloon is a simple, affordable and a valuable technique that can be included in our armamentarium to treat a challenging problem.

REFERENCES


Submitted Jul 29, 2011; accepted Oct 4, 2011.